Ignition Glow Plug System - New Beetle, 2.0L (AEG, AVH, AZG, BDC, BEV & BGD)

IGNITION SYSTEM, SERVICING

GENERAL NOTES ON IGNITION SYSTEM

- Only the components which specifically relate to the ignition system are covered here. For the other components of the injection and ignition system, see **MULTIPORT FUEL INJECTION (MFI) - 2.0L - AEG, AVH, AZG, BDC, BEV & BGD)** .
- For trouble-free operation of the electrical components, a voltage of at least 11.5 V is necessary.
- Disconnecting and connecting the battery must only be done with the ignition switched off, otherwise the engine control module could be damaged.
- During some checks it is possible that the control module will detect and store a fault. Therefore, after completing all checks and repairs the fault memory must be interrogated and, if necessary, erased. See **ENGINE CONTROL MODULE FAULT MEMORY, INTERROGATING AND ERASING** .
- If the engine starts, runs for a short period and then stops, after fault finding, repairs or component tests, then the fault may lie with the immobilizer which is blocking the engine control unit. In such cases the control unit must be adapted. See **COMPONENTS AND FUNCTIONS, ADAPTING** .

Safety precautions. See **SAFETY PRECAUTIONS** .

Test data, spark plugs. See **TEST DATA, SPARK PLUGS** .

IGNITION SYSTEM COMPONENTS, REMOVING AND INSTALLING

Engine code AEG

- Engine codes AVH, AZG, BDC, BEV, BGD. See **ENGINE CODES AVH, AZG, BDC, BEV, BGD** .

NOTE: The following list refers to items in Fig. 1 .

1. **10 N.m**
2. **Ignition wire**
   - With RF suppression type connector and spark plug connector
   - Pull spark plug connector off with T10112
   - Check for continuity
3. **Spark plug**
   - 30 N.m
   - Remove and install with 3122B
   - Type and electrode gap. See **TEST DATA, SPARK PLUGS**
4. **20 N.m**

- Tightening torque influences knock sensor function

5. **Knock Sensor (KS) 2 -G66-**
    - Sensor and connector terminals are gold-plated
6. **3-pin harness connector**
    - Terminals gold plated
    - Brown for KS 2 -G66-
7. **Knock Sensor (KS) 1 -G61-**
    - Sensor and connector terminals are gold-plated
8. **3-pin harness connector**
    - Terminals gold plated
    - Black for KS 1 -G61-
9. **Camshaft Position (CMP) sensor -G40-**
    - Location. See item - 17 - on **ENGINE CODE AEG**
10. **3-pin harness connector**
    - Black
    - For CMP sensor -G40-
11. **4-pin harness connector**
    - Black
12. **Ignition coils - N-, -N128-**
    - Marked for ignition cables: A = Cylinder 1, B = Cylinder 2, C = Cylinder 3 and D = Cylinder 4
    - With Power output stage -N122-
    - Location. See item - 12 - on **ENGINE CODE AEG** .

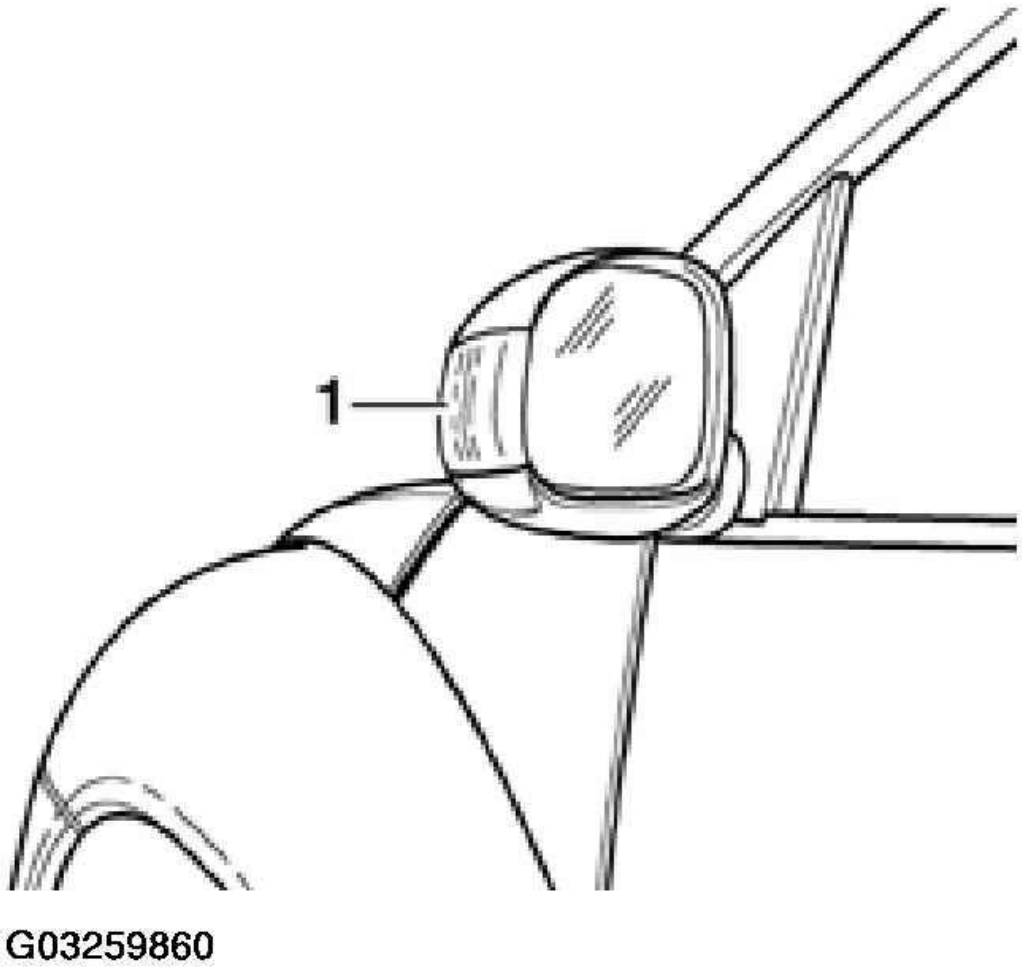


Fig. 1: Exploded View Of Ignition System Components (Engine Code AEG)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Engine codes AVH, AZG, BDC, BEV, BGD

NOTE: The following list refers to items in Fig. 2 .

1. **H.T. cable**
   - 4...8 kohm
   - With suppression connector and spark plug connector
   - Check for continuity
   - Pull spark plug connector off with T10112.

2. **Ignition coils with final output stages -N70-, -N127-, -N291-, -N292-**
    - With marks for H.T. cables: HV1 = Cylinder 1, HV2 = Cylinder 2, HV3 = Cylinder 3, HV4 = Cylinder 4
3. **10 N.m**
4. **6-pin connector**
5. **Knock Sensor (KS) 1 -G61-**
    - Gold plated contacts
    - Location: Cylinder block intake side
6. **2-pin connector**
    - For KS 1 -G61-
    - Gold plated contacts
    - Do not interchange
7. **Knock Sensor (KS) 2 -G66-**
    - Gold plated contacts
    - Next to ignition transformer
8. **2-pin connector**
    - For KS2 -G66-
    - Gold plated contacts
    - Do not interchange
9. **20 N.m**
    - Torque setting influences the function of knock sensor
10. **Spark plug, 25 N.m**
    - Type and electrode gap. See **TEST DATA, SPARK PLUGS**
    - To remove and install pull off connectors for outer injectors
    - Remove and install with 3122 B
11. **Connector**
    - Gold plated contacts
    - 3-pin
12. **10 N.m**
13. **100 N.m**
    - Use counter support tool 3415 to loosen and tighten
14. **Camshaft pulley**
    - With rotor for camshaft position sensor
    - Removing and installing. See **VALVE GEAR, SERVICING**
15. **Camshaft Position (CMP) sensor -G40-**
16. **Retainer**
    - For camshaft position sensor

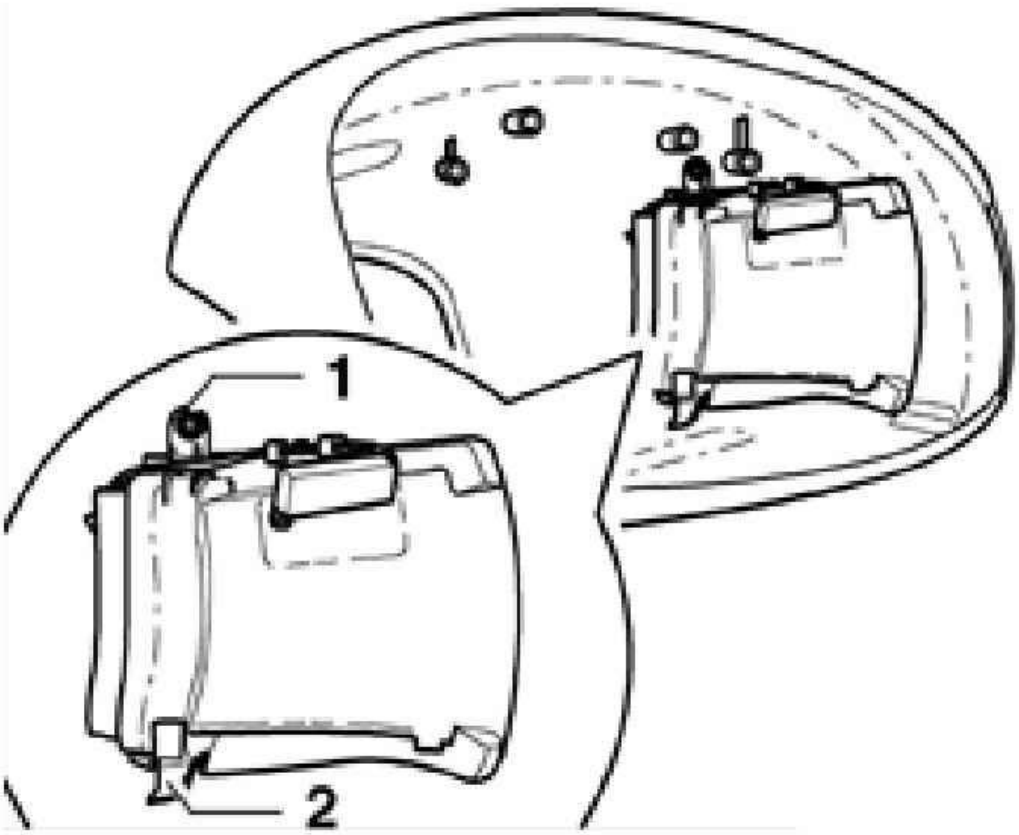


Fig. 2: Exploded View Of Ignition System Components (Engine Code AVH, AZG, BDC, BEV AND BGD)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

SAFETY PRECAUTIONS

To prevent injuries to persons and/or damage to the fuel injection and ignition system, the following must be observed:

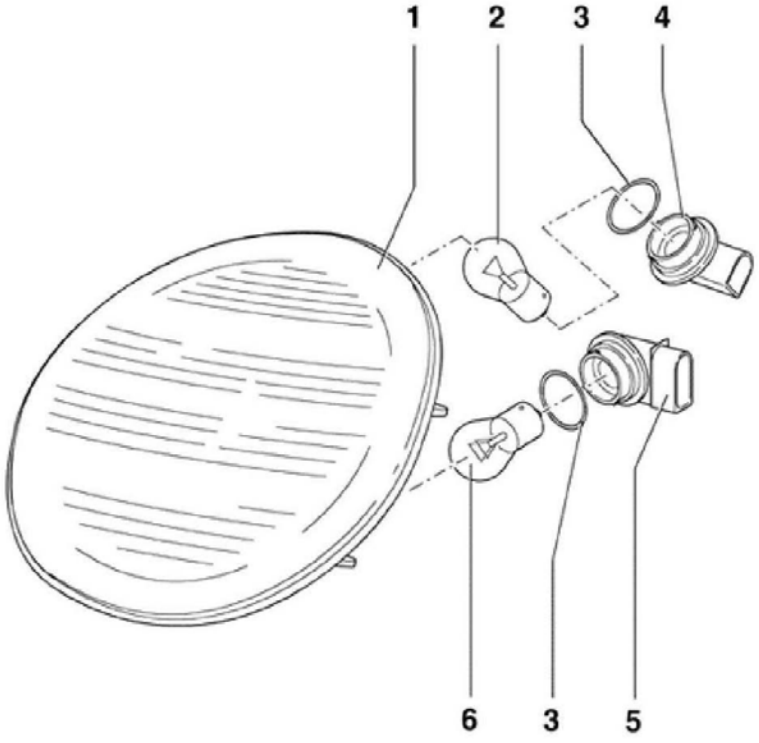
WARNING: When performing repair work, especially due to the confined conditions in the engine compartment, pay attention to the following:

- **Route all types of lines (e.g. for fuel, hydraulics, EVAP system, coolant, refrigerant, brake fluid and vacuum) as well as electrical wiring so that the original positions are restored.**
- **Ensure sufficient clearance to all moving or hot components.**

- Do not touch or disconnect ignition wiring when the engine is running or being turned at starter speed.
- The ignition must be switched off before connecting or disconnecting injection or ignition system wiring or tester cables.
- If the engine is to be turned at starter speed, without starting:

Engine code AEG

- Disconnect 4-pin harness connector -1- from ignition coil power output stage -2-.



1 - Housing

2 - Turn signal bulb

3 - O-ring

4 - Bulb holder for turn signal

5 - Bulb holder for brake light and taillight

6 - Dual filament bulb for brake light and taillight

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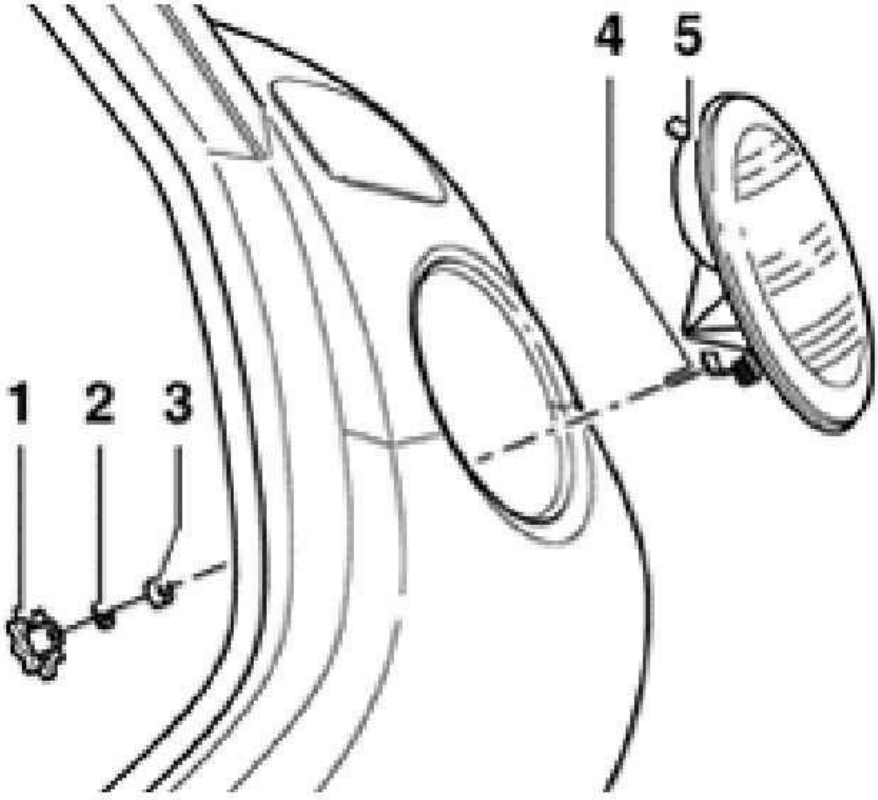
Fig. 3: Disconnecting Pin Harness Connector From Ignition Coil Power Output Stage (Engine Code AEG)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Engine codes AVH, AZG, BDC, BEV, BGD

- Disconnect 6-pin connector from ignition coil with final output stage (arrow).



1 - Knurled nut

2 - Washer

3 - Spacer

4 - Retaining bolt

5 - Rear light

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Fig. 4: Disconnecting Pin Connector From Ignition Coil With Final Output Stage (Engine codes AVH, AZG, BDC, BEV, BGD)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Continuation for all engines

- Pull fuse No. 32 out of fuse holder. Fuse holder is located under access panel at far left end of dash.

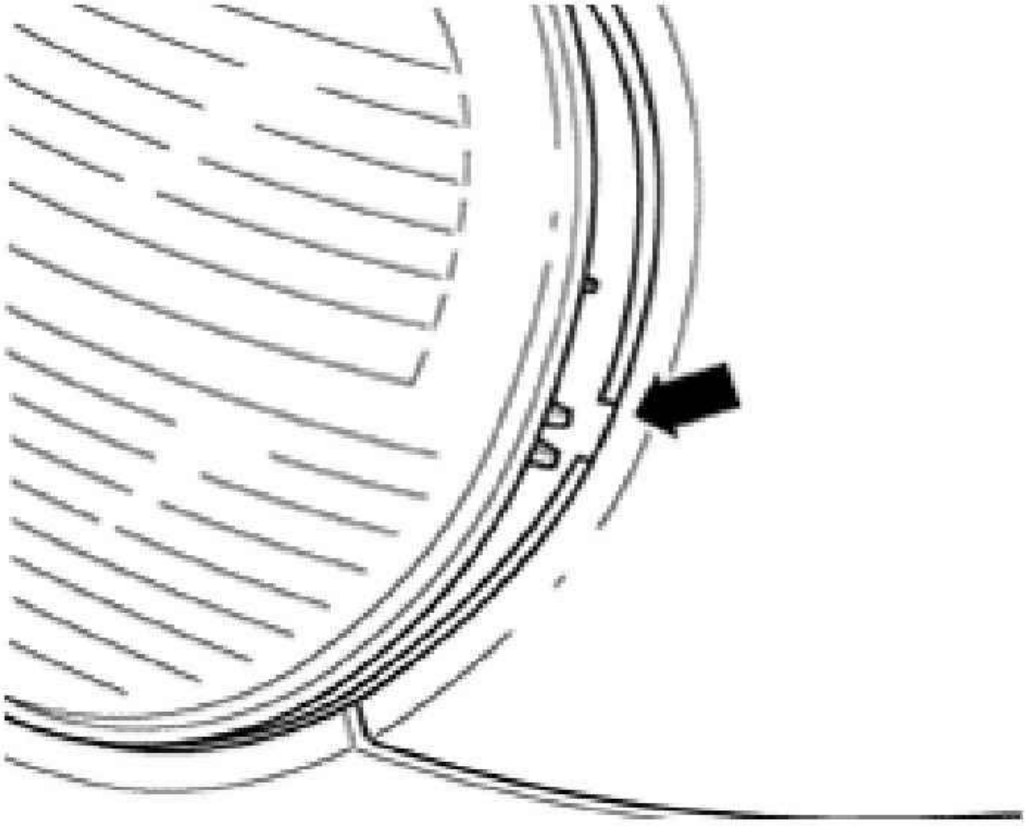

Fig. 5: Identifying Fuse No. 32
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: Removing fuse 32 interrupts the voltage supply to the injectors.

Observe following if test and measuring instruments are required during a road test:

- Test and measuring instruments must be secured to rear seat and operated by an assistant from this

location.

If test and measuring instruments are operated from front passenger's seat and the vehicle is involved in an accident, there is a possibility that the person sitting in this seat may receive serious injuries when the airbag is triggered.

- Erase engine control module fault memory because pulling connectors off injector will have caused a fault to be recorded. See **ENGINE CONTROL MODULE FAULT MEMORY, INTERROGATING AND ERASING** .
- Generate readiness code if fault memory has been erased. See **COMPONENTS AND FUNCTIONS, ADAPTING** .

TEST DATA, SPARK PLUGS

SPARK PLUGS TEST DATA

Engine code	**AEG**	**AVH, AZG, BEV**	**BDC, BGD**
Firing order	1-3-4-2	1-3-4-2	1-3-4-2
Spark Plugs (1) , (2)			
VW	101 000 033 AA	101 000 062 AB	101 000 062 AB
Manufacturer's designation	BKR6ET-10	PZFR5D-11	PZFR 5D-11
Electrode gap	0.9 to 1.1 mm (0.035 to 0.043 in.)	1.0 to 1.1 mm	1.0 to 1.1 mm
Torque setting	30 N.m (22 ft lb)	25 N.m	25 N.m

(1) For spark plug change intervals, see maintenance schedule in owners manual.

(2) Use tool T10112 for disconnecting and connecting spark plug connector. Remove and install spark plugs using tool 3122B.